which should be explored by organised German Arctic explorers, is the great inlet to the higher Arctic regions situated between the eastern shore of Greenland and the western shore of Spitzbergen.

"Considering the results of the second German Arctic expedition, a principal station should be established on the eastern shore of Greenland, and, at least, *two* secondary stations, fitted out for *permanent* investigation of different scientific questions, at Jan Mayen and on the western shore of Spitzbergen. For certain scientific researches the principal station should establish temporary stations.

"3. It appears very desirable, and, so far as scientific preparations are concerned, possible, to commence these Arctic explorations in the year 1877.

"4. The Commission is convinced that an exploration of the Arctic regions, based on such principles, will furnish valuable results, even if limited to the region between Greenland and Spitzbergen; but it is also of opinion than an exhaustive solution of the problems to be solved can only be expected when the exploration is extended over the whole Arctic zone, and when other countries take their share in the undertaking.

"The Commission recommends, therefore, that the principles adopted for the German undertaking should be communicated to the Governments of the States which take interest in Arctic inquiry, in order to establish, if possible, a complete circle of observing stations in the Arctic zones."

But to come to any final decision on the subject at present, as have some of the daily papers, is premature, more especially as we have only mere hints of the work of the latest expedition before us. It is evident, however, that three courses are open to us: we may rest on our oars and comfort ourselves with the belief that no more can be done; we may make another dash, blind to a certain extent it must be with our present knowledge; or, accepting the recommendation of the German Commission, a united and continuous sap may be commenced. But in order to come to a wise decision, men of science must long ponder over the enormous mass of new facts collected by the expedition, and not until this has been done can any opinion worth the stating be possibly arrived at.

Here we would have ended had it not been for the lamentable tone assumed by our leading newspaper in an article on the expedition in Tuesday's issue. It will be remembered that from the first, for some unaccountable reason, the *Times* set its face against the expedition, and prophesied that no good could come of it; now it utters a lonely shout of triumph at the supposed success of its prophecy. For the *Times* appears to be so ill-informed as to believe that the main, if not the sole, object of the expedition was to reach the Pole; if it failed in doing this, then, in the eyes of the *Times*, it was a complete failure. But this is sheer ignorance, real or assumed, on the part of the *Times*; for no informed person ever dreamt that the only object of the well-equipped expedition was to gratify unintelligent curiosity and craving after sensation. The printed instructions of the expedition were essentially: "Reach the Pole if you can, but at any rate, in the light of the latest scientific knowledge, make all possible observations on the multifarious phenomena which can be seen to advantage alone in the Arctic regions." These instructions have been faithfully carried out and with complete success. Every effort was made to reach the Pole, and when the results are published it will be seen that no expedition ever brought home a richer harvest. Whether these results are worth the suffering and the sacrifice of life which the expedition experienced, is a question which will be answered in accordance with one's idea of what is worth running the risk of life for. In spite of the scream of the *Times*, and although no new market has been opened, the people of this country will simply feel proud, and be ennobled by the thought, that the latest deed of heroism has been done by Englishmen—that "the ancient spirit is not dead."

The nation desired the expedition, scientific bodies and scientific men counselled it and worked for it, Government, only after long consideration, willing and liberally granted funds; and out of the volunteers, officers and men, who, well knowing all the risks that would be run, eagerly offered themselves for the service, a dozen similar expeditions could have been equipped. Under these circumstances the *Times'* article is simply an impertinence.

SCHIMPER'S "MOSSES OF EUROPE"

Synopsis Muscorum Europæorum. Auctore W. P. Schimper. Vol. I.—Introductio, pp. 130. Vol. II.—Specierum descriptio, pp. 886. Edit. 2. Stuttgartiæ, 1876. (London: Williams and Norgate.)

THIS long expected work has at last made its appearance, and all students of bryology will be grateful to possess such a vast storehouse of carefully arranged descriptive matter to help them in the determination of species; no easy task at any time, and sometimes one of difficulty and trouble even to an expert.

The first edition appeared in 1860, and we must frankly admit that we experienced some feelings of disappointment, on finding that almost the entire nomenclature and arrangement are identical with those of that edition; nay, in some respects we must look upon the classification as retrograde, for while in his classical work on the Sphagnaceæ, Prof. Schimper strongly insists on the elevation of this family to the rank of a class equivalent to those of Mosses and Hepaticæ, we here find him placing them along with *Andreæa* and *Archidium*, as an appendage to the mosses, under the title of BRYINÆ ANOMALÆ; surely a most unphilosophical mode of dealing with them, since the three genera have nothing else in common but the large saccate calyptra, which had already led Hampe to separate them as a section—*Saccomitria.*

The Cleistocarpous order heads the series, though the author half apologises for still retaining it "as being convenient for beginners, and because the position of some of them among the Stegocarpi is uncertain." Several of our best bryologists, however, have long felt that the solitary character of possessing a capsule without a separable lid, is not sufficient to outweigh all other points of structure and habit, especially when it also necessitates keeping up two parallel series of forms in widely separated families, *e.g.*, *Phascaceæ* and *Pottiaceæ.* We would venture to differ from our author, and consider that *Archidium* is a near ally of *Pleuridium*, and that the absence of a columella is not so momentous a character as to require the separation of these genera to the extreme ends of the system; while *Andreæa* as to its vegetative organs is essentially Grimmiaceous, but in its fruit standing apart

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and thus representing a most distinct natural family, imitating as it were the Hepaticæ by its quadrifid capsule, but not having any real affinity with that group.

About 200 new species are described in the present edition, many of them only known in a barren state, and in several instances misgivings are expressed by the author as to their stability. We may glance at some of these *en passant*. *Ephemerum* has one new species, *E. Rutheanum*, and we surmise our Sussex plant (*E. intermedium*, Wils., *E. tenuinerve*, Lindb.) is also distinct. The *Ephemeraceæ* really seem to merit the rank of a natural family rather allied to *Trichostomaceæ* than to *Funariaceæ*, for which the diminutive size, permanent protonema, and leaf structure would supply the chief characters.

In *Weissiaceæ* we find *Anœctangium*, a genus which has exercised the minds of most bryologists as to its systematic position, but which perhaps is as happily settled here as is possible. *Gyroweisia*, *Hymenostomum*, *Oreoweisia*, and *Rhabdoweisia*, standing as sections of *Weisia* in the previous edition, are now raised to the rank of genera. In *Dicranaceæ* we have also a new genus—*Metzleria*—which appears to be very close to *Dicranodontium*, and *Campylopus* now includes twelve species, while those of *Fissidens* number no less than nineteen. *Leptotrichum*, Hampe, is still retained as a genus, though its author has himself replaced it by the much older name, *Ditrichum*, Timm.

Didymodon and *Trichostomum* receive considerable additions, chiefly, however, only known in a barren state, as is also the genus *Gehcebia*, established to receive *Tortula gigantea*.

We pass next to the great genus *Orthotrichum*, in which we find no less than forty-two species; so uniform are these in habit and foliage, that they have hitherto proved a most troublesome group to deal with, nor do we find that the nine sections into which it is divided help us readily to determine the species. In no genus of mosses do we require so full a series of specimens, for we must have the capsule with its calyptra, and with and without the lid, in order satisfactorily to determine them, and we fear that more species have been established than will eventually prove tenable.

Bryum is another genus receiving a large accession of species—no less than thirty-four new ones—and *Zieria* is still maintained, though used long ago by Sir J. E. Smith for a genus of *Rutaceæ*, and therefore altered by Prof. Lindberg to *Plagiobryum*, which must certainly be adopted. In the Addenda we also find a new genus, *Merceya*, founded on the *Eucalypta ligulata* of Spruce, but strictly we should say that this name must give place to *Scopelophila*, Mitten. Another new genus, *Anacolia*, is also established for *Glyphocarpus Webbii*.

Among Pleurocarpous mosses, *Myurella Careyana* does not find a place, although recorded as found in Europe. *Thuidium decipiens*, De Not., the author states he has not seen, yet it was distributed in Rabenhorst's Bryotheca under both No. 1,141 and 1,182. It has no relation to the genus *Thuyidium*, is erroneously described as monoicous, and indeed can only be regarded as one of the many forms of *Hypnum commutatum*. Of the great tribe *Hypneæ* thirty-six new species are described.

In the BRYINÆ ANOMALÆ we find *Sphagnum* now numbering twenty species, grouped in six sections according to Schliephacke's arrangement. These we fancy will have to be somewhat reduced, as it now appears to be certain that in this family at least, a dioicous and monoicous condition of the inflorescence may occur in the same species.

Neglect of the work of other writers and especially of papers in the various botanical journals of this and other countries is the principal shortcoming of the work before us, and probably the author has not had time properly to consult them; in every other respect the Synopsis maintains the high character it had already acquired, for no description of species could be more accurate and painstaking, while the paper and printing are superior to the ordinary run of foreign books.

It will thus be seen that Schimper's Synopsis must still continue to be the standard work on the mosses of Europe, and fitly comes to us from an author whose name has been identified with the study of these interesting plants for the past forty years.

OUR BOOK SHELF

Outlines of Practical Histology. By William Rutherford, M.D., F.R.S. Second Edition. (J. and A. Churchill, 1876.)

WHEN, a year ago, we reviewed this work upon its first appearance, it consisted of but seventy-two pages, and contained four illustrations; the second edition occupies very nearly two hundred pages, and is illustrated with sixty-three woodcuts. The enlargement gives the author an opportunity of entering with considerably greater detail into his subject, and he is able to introduce much new matter. Among the most important additions we may mention a chapter on the optical principles upon which the microscope is constructed, including immersion lenses, and an instrument manufactured by Mr. Swift of London, which is apparently as good as those of continental celebrity. The histological sections may be said, practically, to be re-written, for to almost every one is added matter of great value, essential to all but the merest commencer. Among these we notice paragraphs upon the effects of gases on the blood, the enumeration of the discs, the "prickle" cells of the epidermis, lymphatics of the diaphragm, coverings of hair, structure of the retina and of the cerebral convolutions. In the fourth part of the work, which is devoted to general considerations regarding histological methods, the application of vapours and gases to tissues is explained, as are the hot stage for the microscope, with its heating apparatus and the moist chamber of Dallinger and Drysdale. The author's microtome is figured, as is the apparatus necessary for injecting tissues by the pressure-bottle. All the figures are excellently drawn, and very lucid, and so greatly has the book increased in value, instructive as it was before, that we feel quite justified in recommending those who possess the first edition to purchase the second, and those who are studying the first principles of practical histology to obtain it without fail.

A Study of the Rhætic Strata of the Val di Ledro in the Southern Tyrol. By T. Nelson Dale, jun., Member of the Geological Society of France. Pp. 69, with Map and Sections. (Paterson, New Jersey, 1876.)

ON the western side of the Lago di Garda is situated a tract of Secondary rocks which has been comparatively little explored by geologists. Lying as it does exactly upon the Austro-Italian frontier, this area has neither been described by Stoppani and the Italian geologists, nor has it received full justice from the officers of the Vienna

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